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BROOKS'
AVERAGE TIME
TABLES,
AT SIX PER CENT.

KF9331

„ Rom

J. L. Bates.

10 Nov 1851

A

SHORT AND EASY METHOD

FOR

OBTAINING, BY THE HELP OF A TABLE,

THE

AVERAGE TIME

UPON

BILLS OF MERCHANDISE, NOTES, ACCOUNTS, &c.

CONTAINING

TWO COMPLETE SETS OF PRACTICAL EXAMPLES OF ALL THE DIFFERENT VARIETIES OF BILLS THAT EVER OCCUR IN BUSINESS, WITH FULL AND LUCID EXPLANATIONS, NOTES AND DEMONSTRATIONS.

THE WHOLE BASED UPON INTEREST

(THE ONLY TRUE BASIS OF AVERAGE TIME)

AT SIX PER CENT.

TOGETHER WITH

A COMPLETE TIME TABLE.

BY L. BROOKS.

THIRD EDITION, REVISED.

1851.

Entered according to Act of Congress, in the year 1851, by L. BROOKS, in the Clerk's Office of the District Court of New Hampshire.

KF 9331

ERSITY
RARY
47130

THERE is nothing, in the whole routine of business, that merchants and business men find more difficult and perplexing than to ascertain the average date of several Bills bought at different times, or the date when they all average due, by any of the tedious methods generally used.

Our Arithmetics and systems of Book-Keeping contain, at best, but a meagre synopsis of Equation of Payments, which is in many instances utterly valueless to the practical man; and this comprises absolutely *all* that is written upon the subject.

To this total absence of anything like a plain analytical method, fully and clearly illustrated by such examples as actually occur in business, more than to the complicated nature of the operation itself, is to be attributed the fact, that very few business men, in city or country, understand how to average *correctly* every variety of account that may occur; while a very large majority are wholly unable to average even those that are of the simplest form.

These facts, and the constantly increasing want of the business community, as this manner of settling accounts is becoming more widely and generally appreciated and adopted, with the repeated inquiries of merchants for something that would render them some effective assistance in this particular, have induced me to prepare and present this method to the public, which is perfectly accurate, and, as it is very short, facilitates this important item of business, by relieving it of the tediousness, and removing the obscurity, which have hitherto attended it, establishing it upon *Interest*, its own and *only* legitimate basis.

It has been my constant aim to make it *purely* and *wholly* a practical business assistant, studiously avoiding all technicalities, and using such language only as would most clearly and happily express the ideas I wished to convey.

I have purposely used the same language, in explaining the different examples, as far as practicable, and made everything as simple and plain as possible.

And firmly believing that experience will prove this much the shortest, plainest, and the most comprehensive method ever used, it is cheerfully submitted to the test of public scrutiny.

Great Falls, *April*, 1851.

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AVERAGE DATE.

To find the average date of all the Bills.

RULE. — Find what the interest would be upon each of the bills from the first day of the month in which the first bill was bought until they were severally purchased. Then add the interest of the several bills together, and place four ciphers at the right of the amount, and divide this sum by the amount of all the bills; and against the quotient, or answer, in the Table of Quotients, stands the time from the day from which the interest is reckoned to the average date of all the bills.

N. B. If, in using either method, there are cents in the interest, and none in the bills, annex but two ciphers; — if there are cents in the bills, and none in the interest, annex six ciphers, and proceed as above.

NOTE. — The first day of the month in which the first bill was bought is used in this method, because it is the most convenient; as the number of months from that date until the bills were bought is readily found, and the number of days is always the same as the date of the bills; which is not the case with any other date.

AVERAGE DUE.

To find when all the Bills will average due.

RULE. — Find what the interest would be upon each bill from the first day of the month following the one in which the last bill was purchased, until they are severally due.

Then add the interest of the several bills together, and place four ciphers at the right of the amount, and divide this sum by the amount of all the bills; and against the quotient, or answer, in the Table of Quotients, stands the time from the day from which the interest is reckoned, at which all the bills will average due.

NOTE. — The first day of the month following the one in which the last bill was bought is used in this method, because it is the most convenient; as the number of months that the bills have to run from that date is readily found, and the number of days is always the same as the date of the bills; which is not the case with any other date.

DIRECTIONS.

No knowledge of anything that precedes or follows any example in this work is necessary in order to fully understand any particular example; as each is as fully and independently explained as if that was the only example it contained; —

Therefore, when an account is to be averaged, turn to the example which contains the same kind of bills that the account contains; and average the account in the same manner as the example is averaged.

If an account contains more kinds of bills than are found in any *one* example, dispose of each *kind* as it is disposed of in the example containing it.

In getting the interest, when Bills contain dollars and cents, the cents, if under fifty, are omitted; if over fifty, are counted as one dollar.

EXAMPLE I. AVERAGE DATE.

When the Bills are on equal time, and none have become Due.

GEORGE CARPENTER, Dr.

	1850.		March 1st.				Int. 6 pr ct.	
0 mos.	Mar.	8	To Merchandise,	6 mos.	$44	16		06
	“	19	“ “		97	83		31
	“	23	“ “		26	13		10
	“	28	“ “		200	00		93
	“	29	“ “		56	00		27
1 mo.	Apr.	6	“ “		71	10		43
	“	9	“ “		43	60		29
	“	15	“ “		66	00		50
	“	17	“ “		88	84		70
	“	29	“ “		179	00	$1	76
2 mos.	May	14	“ “		24	20		30
	“	17	“ “		71	00		91
	“	21	“ “		14	79		20
	“	23	“ “		470	85	6	51
	“	27	“ “		77	11	1	12
3 mos.	June	1	“ “		68	87	1	05
	“	3	“ “		11	08		18
	“	5	“ “		81	00	1	29
	“	13	“ “		90	94	1	57
	“	25	“ “		61	18	1	17
4 mos.	July	4	“ “		16	74		35
	“	12	“ “		57	06	1	25
	“	13	“ “		384	20	8	51
	“	16	“ “		82	12	1	86
	“	19	“ “		34	87		81
					$2418	67	$32	43

2418.67) 32.430000 (134

Against 134, in the Quotient Table, stands 2 months and 20 days, — the time from March 1st to the average date of the bills, which is May 20th.

EXPLANATION.

In getting the time, in this example, we write 0 against the first month's bills with a pencil on the margin, and against the next months bills, 1, 2, 3, and 4, respectively, which is the number of months; and the date of the bills is the number of days from March 1st until the bills were severally purchased, and consequently the time for which the interest is to be found.

Then we place the interest for each bill (which is found, at a glance, by Brooks & Haley's Interest Table) for the time standing against it on the margin against the bills.

Then we add all the bills together, and find the amount is $2418.67.

Then we add the interest of all the bills together, and place 4 ciphers at the right of the amount, — thus, $32.430000, — and divide this sum by the amount of the bills, and get 134 for a quotient, or answer; and against this quotient, in the Table of Quotients, stands 2 months and 20 days, which is the time, from March 1st, to the average date of all the bills, which is readily found, by the Time Table, to be May 20th; and, by the same Table, we see that they will become due Nov. 20th.

NOTE. In this example, all the bills would have earned $32.43 from March 1st until they were bought, each bill earning its own proportion of this sum, according to its amount and the length of time from March 1st until it was purchased.

Now, as this is the whole amount that all the bills would have earned separately from March 1st until each was bought, the average date would be just as far ahead of March 1st as it would take the whole amount of all the bills to earn the same amount, which is 2 months and 20 days.

The shortest possible method of finding the time in which any given sum will earn a given amount of interest is given in the rule, and used in the example, viz.: annex 4 ciphers to the interest, divide by the principal, and against the quotient, in the Quotient Table, stands the time.

DEMONSTRATION.

1850.			May 1st.				Int. 6 pr ct.	
0 mos.	May	3	To Merchandise,	6 mos.	$100	00		05
1 mo.	June	3	" "		100	00		55
2 mos.	July	3	" "		100	00	1	05
					$300	00	$1	65

300.00) 1.650000 (55

Against 55, in the Quotient Table, stands 1 month and 3 days, — which is the time, from May 1st, to the average date, which is June 3d.

In this example, it is evident that the average date of all the bills would be June 3d; for, as all the bills are of equal amount, the date of the first bill would be carried forward 1 month, and the date of the last bill be brought back 1 month, which would bring them all together on the date of the second bill, viz., June 3d, which is the result shown by this method; hence, the method is correct.

N. B. As method first and second agree, they mutually prove each other.

EXAMPLE II. AVERAGE DATE.

When the Bills are on unequal time, and none have become Due.

William H. Carpenter, Dr.

	1850.		Oct. 1st.				Int. 6 pr ct.	
2 mos.	Oct.	3	To Merchandise,	6 mos.	$91	00		96
0 "	"	5	" "	4 "	58	90		05
0 "	"	13	" "	4 "	100	00		22
4 "	"	19	" "	8 "	44	60	$1	04
4 "	"	23	" "	8 "	77	20	1	84
0 "	"	27	" "	4 "	14	87		07
1 mo.	Nov.	2	" "	4 "	92	27		49
3 mos.	"	7	" "	6 "	389	96	6	31
3 "	"	14	" "	6 "	21	24		37
5 "	"	17	" "	8 "	66	00	1	84
5 "	"	20	" "	8 "	44	67	1	28
3 "	"	22	" "	6 "	11	14		21
2 "	Dec.	9	" "	4 "	29	94		35
6 "	"	11	" "	8 "	77	30	2	45
4 "	"	15	" "	6 "	64	83	1	46
4 "	"	19	" "	6 "	43	26	1	00
6 "	"	25	" "	8 "	211	74	7	24
2 "	"	26	" "	4 "	58	33		83
4 "	"	29	" "	6 "	16	10		40
5 "	Jan.	11	" "	6 "	423	90	11	37
7 "	"	12	" "	8 "	41	34	1	52
3 "	"	16	" "	4 "	16	91		31
3 "	"	21	" "	4 "	77	40	1	43
5 "	"	26	" "	6 "	19	00		56
7 "	"	27	" "	8 "	91	80	3	63
					$2183	70	$47	23

2183.70) 47.230000 (216

Against 216, in the Quotient Table, stands 4 months and 9½ days, — the time from October 1st to the average date of the bills, which is February 10th.

EXPLANATION.

In getting the time, in this example, we take 4 months as the basis of the operation; and against the 4 months bills in the first month we place 0; and against the 4 months bills in the following months, 1, 2 and 3, respectively.

Then against the 6 months bills of each month we place 2 more, and against the 8 months bills 4 more, than against the 4 months bills of the same month; thus, against the 6 months bills for the first month we place 2, as there is cipher against the 4 months bills; and 4 against the 8 months bills, &c., which is the number of months; and the date of the bills is the number of days, from October 1st, for which the interest is to be found. This virtually resolves all the bills into 4 months bills, by placing the date of purchase as many months ahead of the *real* date as they exceed 4 months in length, which is the same, in fact, as if they had been bought on 4 months, two, and four months *later* than they *really* were; consequently, they will *all* average due *four months* from the average date thus obtained.

Then we place the interest of each bill for the time standing against it on the margin against the bills.

Then we add all the bills together, and find the amount is $2183.70.

Then we add the interest of all the bills together, and place 4 ciphers at the right of the amount, — thus, $47.230000, — and divide this sum by the amount of all the bills, and get 216 for a quotient, or answer; and against this quotient, in the Table of Quotients, stands 4 months and 9½ days, which is the time, from October 1st, to the average date of all the bills; which is readily found by the Time Table to be Feb. 10th.

NOTE. In this example, all the bills would have earned $47.23 interest from October 1st until they were bought (considering them all 4 months bills), each bill earning its own proportion of this sum, according to its amount, and the length of time from October 1st until it was purchased.

Now, as this is the whole amount that all the bills would have earned separately from October 1st until each was bought, the average date would be just as far ahead of October 1st, as it would take the whole amount of the bills to earn the same amount of interest, which is 4 months and 9½ days.

DEMONSTRATION.

1850.	November 1st.				Int. 6 pr ct.	
0 mos. Nov. 25	To Merchandise,	4 mos.	$100	00		42
2 mos. Nov. 25	" "	6 "	100	00	1	42
4 mos. Nov. 25	" "	8 "	100	00	2	42
			$300	00	$4	26

300.00) 4.260000 (142

Against 142, in the Quotient Table, stands 2 months and 25 days, which is the time from Nov. 1st to the average date, which is Jan. 25th.

In this example, there are three bills of equal amount, bought the same day, on 4, 6, and 8 months; and they will, of course, average due in 6 months, and the average date will be the date of the purchase.

But, as we use 4 months as the basis of our calculation, the average date will be 2 months later, or 2 months and 25 days from Nov. 1st, which is the result shown by this method; hence it is correct.

EXAMPLE III. AVERAGE DATE.

When a part of the Bills have become Due.

George F. Kimball, **Dr.**

1850.			July 1st.				Int. 6 pr ct.	
0 mos.	July	7	To Merchandise,	6 mos.	$71	00		08
	"	13	"	"	48	90		11
	"	17	"	"	63	11		18
	"	20	"	"	16	87		06
1 mo.	Aug.	1	"	"	67	90		35
	"	6	"	"	47	00		29
	"	9	"	"	16	23		10
	"	14	"	"	26	25		19
2 mos.	Sept.	3	"	"	44	67		47
	"	21	"	"	59	00		80
3 mos.	Oct.	14	"	"	87	97	$1	53
	"	19	"	"	33	18		60
	"	23	"	"	11	75		23
4 mos.	Nov.	2	"	"	91	00	1	85
	"	5	"	"	133	13	2	77
	"	11	"	"	83	87	1	83
	"	15	"	"	70	23	1	58
	"	22	"	"	100	00	2	37
	"	25	"	"	79	80	1	93
5 mos.	Dec.	3	"	"	24	11		61
1851.	"	9	"	"	93	00	2	47
6 mos.	Jan.	5	"	"	412	08	12	70
	"	8	"	"	91	40	2	85
7 mos.	Feb.	16	"	"	71	60	2	71
8 mos.	Mar.	24	"	"	89	87	3	96
	"	27	"	"	49	18	2	18
					$1983	10	$44	80

1983.10) 44.800000 (225

Against 225 in the Quotient Table stands 4 months and 15 days, — the time from July 1st to the average date of the bills, which is November 15th.

EXPLANATION.

In getting the time in this example, we write 0 against the first month's bills, and against the next months' bills 1, 2, 3, 4, 5, 6, 7 and 8, respectively, which is the number of months;

and the date of the bills is the number of days from July 1st until the bills were severally purchased, and consequently the time for which the interest is to be found.

Then we place the interest for each bill for the time standing against it on the margin against the bills.

Then we add all the bills together, and find the amount is $1983.10.

Then we add the interest of all the bills together, and place 4 ciphers at the right of the amount, thus, — $44.800000, — and divide this sum by the amount of the bills, and get 225 for a quotient, or answer; and against this quotient, in the Table of Quotients, stands 4 months and 15 days, which is the time from July 1st to the average date of all the bills, which is readily found by the Time Table to be Nov. 15th; and by the same Table we see that they will average due May 15th.

Note. In this example, all the bills would have earned $44.80 from July 1st until they were bought, each bill earning its own proportion of this sum, according to its amount and the length of time from July 1st until it was purchased.

Now, as this is the whole amount that all the bills would have earned separately from July 1st until each was bought, the average date would be just as far ahead of July 1st as it would take the whole amount of all the bills to earn the same amount, which is 4 months and 15 days.

The shortest possible method of finding the time in which any given sum will earn a given amount of interest is given in the rule, and used in the example, viz.: annex 4 ciphers to the interest, divide by the principal, and against the quotient, in the Quotient Table, stands the time.

DEMONSTRATION.

1850.	March 1st.				Int. 6 pr ct.	
0 mos. Mar. 3	To Merchandise,	6 mos.	$100	00		05
4 mos. July 3	" "		100	00	2	05
8 mos. Nov. 3	" "		100	00	4	05
			$300	00	$6	15

300.00) 6.150000 (205

Against 205 in the Quotient Table stands 4 months and 3 days, the time from March 1st to the average date, which is July 3d.

In this example it is evident that the average date of all the bills would be July 3d; for, as all the bills are of equal amount, the date of the first bill would be carried forward 4 months, and the date of the last bill brought back 4 months, which would bring them all together on the date of the second bill, viz., July 3d, which is the result shown by this method; hence the method is correct.

EXAMPLE IV. AVERAGE DATE.

When a part are Cash Bills.

THOMAS F. MASON, Dr.

	1850.		March 1st.					Int. 6 pr ct.	
0 mos.	Mar.	9	To Merch.	Int.	6 mos.	$26	75		04
	"	11	" "	.51	Cash	17	14		03
	"	15	" "			97	00		24
1 mo.	Apr.	3	" "			25	91		14
	"	18	" "			187	10	$1	50
	"	20	" "	1.68	Cash	56	00		47
	"	25	" "			43	50		40
	"	27	" "			100	00		95
2 mos.	May	12	" "			14	00		17
	"	16	" "			79	89	1	01
	"	17	" "	1.50	Cash	50	00		64
	"	19	" "			91	27	1	20
3 mos.	June	2	" "			210	00	3	22
	"	4	" "			49	58		78
	"	7	" "			11	10		18
	"	13	" "	3.45	Cash	114	50	1	98
4 mos.	July	18	" "			78	50	1	82
	"	27	" "			66	00	1	62
	"	28	" "			87	91	2	17
5 mos.	Aug.	1	" "	1.93	Cash	31	10		79
	"	8	" "	$8.07		41	00	1	08
	"	11	" "			111	80	3	00
	"	14	" "			40	40	1	09
	"	19	" "			71	67	2	03
						$1702	12	$26	55
								8	07

1702.12) 18.480000 (108 $18.48

Against 108, in the Quotient Table, stands 2 months and 5 days, — the time, from March 1st, to the average date of the bills, which is May 5th.

EXPLANATION.

In getting the time, in this example, we write 0 against the first month's bills, and against the following months bills, 1, 2, 3, 4, and 5, respectively, which is the number of months; and the date of the bills is the number of days from March 1st until the bills were severally purchased, and consequently the time for which the interest is to be found.

Then we place the interest of each bill (cash bills included) for the time standing against it on the margin against the bills.

Then we find the interest upon the cash bill for six months, and place it on the blank space at the left, against the cash bills.

Then we add all the bills together, and find the amount is $1702.12.

Then we add the interest of all the cash bills for 6 months together, and find the amount is $8.07, and subtract this sum from $26.55, the amount of the interest of all the bills, and place 4 ciphers at the right of the balance, — thus, $18.480000, — and divide this sum by the amount of all the bills, and get 108 for a quotient, or answer; and against this quotient, in the Table of Quotients, stands 2 months and 4½ days, which is the time, from March 1st, to the average date of all the bills, which is readily found, by the Time Table, to be May 5th.

Note. In this example, all the bills, from March 1st until they were bought, would earn $26.55 interest; and, if none were cash bills, the average date would be just as far from that date as it would take the sum total of the bills to earn that sum. But this would give the *cash* bills six months time, whereas, in fact, they have *none*; consequently, the interest of the cash bills for six months, which is $8.07, should be deducted from $26.55, and the average date is just as far ahead of March 1st as it would take the whole amount of the bills to earn the balance, which is 2 months and 5 days.

DEMONSTRATION.

	1850.		February 1st.					Int. 6 pr ct.	
0 mos.	Feb.	4	To Merch.	Int. 6 mos.	6 mos.	$100	00		07
2 "	Apr.	4	" "	3.00	Cash	100	00	1	07
4 "	June	4	" "		6 mos.	100	00	2	07
						$300	00	$3	21
								3	.00
									.21

300.00) .210000 (7

Against 7, in the Quotient Table, stands 4 days, — the time, from February 1st, to the average date, which is Feb. 4th.

In this example, the first and last bills taken alone would average due Oct. 4th, 6 months from April 4th, the date of the cash bills, as one was bought 2 months before, and the other 2 months after, that date. But, as the cash bill was bought at that time, and is just one half the amount of the two others, it will shorten the time they have to run just half as much as its own time is extended; consequently, they will all average due 4 months, instead of 6, from April 4th, viz., Aug. 4th, and the average date 6 months previous, Feb. 4th; and, as this is the result by this method, the method is correct.

EXAMPLE V. AVERAGE DATE.

When Cash is credited on Account.

JOHN C. PARMENTER, DR.

1850.			Nov. 1st.				Int. 6 pr ct.	
0 mos.	Nov.	7	To Merchandise,	6 mos.	$97	20		11
	"	14	"	"	190	80		44
	"	17	"	"	66	00		19
	"	19	"	"	89	33		28
	"	29	"	"	181	75		88
1 mo.	Dec.	2	"	"	46	60		26
2 mos.	Jan.	5	"	"	88	79		96
	"	20	"	"	79	46	$1	05
3 mos.	Feb.	14	"	"	200	27	3	47
	"	21	"	"	93	10	1	73
	"	25	"	"	56	18	1	07
4 mos.	Mar.	13	"	"	71	88	1	60
	"	18	"	"	86	36	1	98
					$1347	72	$14	02
					350	68	5	24
					$997	04	$8	78
							10.53	
			997.04)19.310000(193				$19.31	

Against 193, in the Quotient Table, stands 3 months and 25½ days, — the time, from Nov. 1st, to the average date of the bills, which is Feb. 26th.

EXPLANATION.

In getting the time, in this example, we write 0 against the first month's bills, and against the following months, 1, 2, 3, and 4, respectively, which is the number of months; and the date of the bills is the number of days from Nov. 1st until the bills were severally purchased, and consequently the time for which the interest is to be found.

Then we place the interest of each bill for the time standing against it on the margin against the bills.

Then we find the interest upon each item of credit from Nov. 1st until it was paid, and place it on the margin against the credit.

Then we find the interest for the whole amount of credit for six months, and place it at the left of the sum total of the credit.

JOHN C. PARMENTER, CR.

1850.		Nov. 1st.			Int. 6 pr ct.	
0 mos. Nov.	29	By Cash,	$100	00		48
1851.						
3 mos. Feb.	14	" "	150	00	2	69
" "	25	" "	25	68		41
4 mos. Mar.	13	" "	75	00	1	66
		Inter. 6 mos., $10.53	$350	68	$5	24

Then we add the interest of the bills from Nov. 1st to the time they were bought, and the interest for the whole amount of credit for six months, together, and from the amount subtract the interest of the credit from Nov. 1st to the time it was paid, and place 4 ciphers at the right of the balance, — thus, 19.310000, — and divide this sum by the balance due, viz., $997.04, and get 193 for a quotient, or answer; and against this quotient, in the Table of Quotients, stands 3 months and 25½ days, which is the time, from Nov. 1st, to the average date of the balance due, which is readily found, by the Time Table, to be Feb. 26th; and, by the same Table, we see it will average due Aug. 26th.

NOTE. — In this example, all the bills would earn $14.02 interest from Nov. 1st until each was purchased; and if there was no credit in the account, the average date would be just as far ahead of Nov. 1st as it would take the whole amount of the bills to earn that sum. But the interest of the credit from Nov. 1st until each item was paid would balance $5.24 of the interest of the bills, leaving a remainder of $8.78; and to this sum should be added the interest of the whole amount of credit for six months (otherwise the debtor would lose that amount of interest), which would make $19.31, and the average date of the balance due would be just as far ahead of Nov. 1st as it would take the balance due to earn that amount of interest.

EXPLANATION TO DEMONSTRATION ON PAGE 25.

In this example, the two bills would average due Aug. 18th, six months from Feb. 18th, being of equal amount, and one being bought one month before, and the other one month after, that date. But, just five months before they average due, one half of the amount is paid, which would extend the time of the balance 5 months longer than Aug. 18th, viz., to Jan. 18th, 1851; and, as this is the result by this method, the method is correct.

EXAMPLE VI. AVERAGE DATE.

When there is an Exchange of Goods on Time.

JACOB W. WORTHEN, DR.

1850.		Sept. 1st.			Int. 6 pr ct.	
0 mos. Sept.	11	To Merchandise, 6 mos.	$36	83		07
"	14	" "	47	27		11
"	19	" "	186	91		60
"	23	" "	17	11		07
1 mo. Oct.	4	" "	89	03		51
"	9	" "	77	66		51
"	13	" "	313	13	$2	25
2 mos. Nov.	8	" "	46	69		53
"	12	" "	89	31	1	07
"	26	" "	104	00	1	49
3 mos. Dec.	9	" "	90	91	1	51
"	17	" "	200	27	3	57
"	21	" "	88	72	1	65
"	26	" "	50	40		97
"	27	" "	60	70	1	19
4 mos. Jan.	3	" "	99	00	2	03
"	13	" "	71	33	1	57
"	18	" "	14	10		32
"	20	" "	27	93		65
5 mos. Feb.	18	" "	46	26	1	29
"	19	" "	111	14	3	13
			$1868	70	$25	09
			718	71	9	95
			$1149	99	$15	14
		1149.99) 15.140000 (131				

Against 131, in the Quotient Table, stands 2 months and 18½ days, — the time, from Sept. 1st, to the average date of the balance due, which is Nov. 19th.

EXPLANATION.

In getting the time, in this example, we write 0 against the first month's bills, and against the following months, 1, 2, 3, 4, and 5, respectively (the same figures against the same months on both sides of the account, — that is, 1 against October, 2 against November, &c., on both Dr. and Cr.), which is the number of months; and the date of the bills is the number of days, JACOB W. WORTHEN, Cr.

1850.			Sept. 1st.				Int. 6 pr ct.	
1 mo.	Oct.	8	By Merchandise,	6 mos.	$64	08		41
	"	13	"	"	92	46		66
	"	15	"	"	70	30		53
2 mos.	Nov.	6	"	"	16	83		19
	"	23	"	"	47	14		65
	"	26	"	"	200	25	2	87
	"	28	"	"	11	84		18
3 mos.	Dec.	3	"	"	20	20		31
	"	13	"	"	37	82		65
	"	15	"	"	46	36		81
4 mos.	Jan.	24	"	"	92	80	2	23
	"	26	"	"	18	63		46
					$718	71	$9	95

from Sept. 1st, until the bills were severally purchased, and consequently the time for which the interest is to be found.

Then we place the interest of each bill (on both sides of the account) for the time standing against it on the margin against the bills.

Then we subtract the interest of the Cr. side from the interest of the Dr. side of the account, and place 4 ciphers at the right of the remainder, — thus, $15.140000, — and divide this sum by the balance due, viz., $1149.99, and get 131 for a quotient, or answer; and against this quotient, in the Table of Quotients, stands 2 months and 18½ days, which is the time, from Sept. 1st, to the average date of the balance due, which is readily found, by the Time Table, to be Nov. 19th.

NOTE. In this example, all the bills on the Dr. side of the account would have earned $25.09 interest, and all the bills on the Cr. side $9.95, from Sept. 1st, until each bill was bought; and the average date of the balance due on the account would be just as far ahead of Sept. 1st as would be required for the same amount to earn $15.14 (the difference between the interest of the Cr. and Dr. sides of the account), which is 2 months and 18½ days.

N. B. When the interest of the smaller side of the account is larger than the interest of the greater side, subtract the smaller sum of interest from the greater and divide as before, and reckon the time *back*, instead of forward, from the date used.

EXAMPLE I. AVERAGE DUE.

When the Bills are on equal time, and none have become Due.

George Carpenter, Dr.

	1850.						Int. 6 pr ct.	
1 mo.	Mar.	8	To Merchandise,	6 mos.	$44	16		28
	"	19	"	"	97	83		80
	"	23	"	"	26	13		23
	"	28	"	"	200	00	$1	93
	"	29	"	"	56	00		55
2 mos.	Apr.	6	"	"	71	10		78
	"	9	"	"	43	60		51
	"	15	"	"	66	00		83
	"	17	"	"	88	84	1	14
	"	29	"	"	179	00	2	65
3 mos.	May	14	"	"	24	20		42
	"	17	"	"	71	00	1	27
	"	21	"	"	14	79		28
	"	23	"	"	470	85	8	87
	"	27	"	"	77	11	1	51
4 mos.	June	1	"	"	68	87	1	39
	"	3	"	"	11	08		23
	"	5	"	"	81	00	1	69
	"	13	"	"	90	94	2	02
	"	25	"	"	61	18	1	47
5 mos.	July	4	"	"	16	74		44
	"	12	"	"	57	06	1	54
	"	13	"	"	384	20	10	43
	"	16	"	"	82	12	2	27
	"	19	"	"	34	87		99
			August 1st.		$2418	67	$44	52

2418.67) 44.520000 (184

Against 184, in the Quotient Table, stands 3 months and 20 days, — the time, from August 1st, at which all the bills will average due, which is Nov. 20th.

EXPLANATION.

In getting the time, in this example, we write 5 against the last month's bills with a pencil on the margin, and against the next months preceding, 4, 3, 2, and 1, respectively, which is the number of months; and the date of the bills is the number of days which the bills have to run, from August 1st, until they are severally due, and consequently the time for which the interest is to be found.

Then we place the interest of each bill (which is found, at a glance, by Brooks & Haley's Interest Table) for the time standing against it on the margin against the bills.

Then we add all the bills together, and find the amount is $2418.67.

Then we add the *interest* of all the bills together, and place 4 ciphers at the right of the amount, — thus, $44.520000, — and divide this sum by the amount of the bills, and get 184 for a quotient, or answer; and against this quotient, in the Table of Quotients, stands 3 months and 20 days, which is the time, from August 1st, that all the bills will average due, which is readily found, by the Time Table, to be Nov. 20th; and, by the same Table, we see that the average date 6 months previous is May 20th.

Note. In this example, the whole amount of interest that all the bills would earn from Aug. 1st until each became due is $44.52; and as the debtor is required to pay the whole amount of all the bills at one time, the payment should be deferred just as long after Aug. 1st as would be required for the sum total of the bills to earn that sum, which is 3 months and 20 days; and then the whole would average due.

The shortest possible method of finding the time in which any given sum will earn a given amount of interest is given in the rule, and used in the example, viz.: annex 4 ciphers to the interest, divide by the principal, and against the quotient, in the Quotient Table, stands the time.

DEMONSTRATION.

1850.					Int. 6 pr ct.	
3 mos. May 3	To Merchandise,	6 mos.	$100	00	1	55
4 mos. June 3	" "		100	00	2	05
5 mos. July 3	" "		100	00	2	55
	August 1st.		$300	00	$6	15

300.00) 6.150000 (205

Against 205, in the Quotient Table, stands 4 months and 3 days, — the time, from Aug. 1st, which the bills will average due, which is Dec. 3d.

In this example, it is evident that all the bills will average due Dec. 3d, six months from June 3d; for, as all the bills are of equal amount, the time of the first bill would be lengthened 1 month, and the date of the last bill shortened 1 month, which would bring them all together on the date of the second bill, viz., June 3d, which is the result shown by this method; hence, the method is correct.

EXAMPLE II. AVERAGE DUE.

When the Bills are on unequal time, and none have become Due.

WILLIAM H. CARPENTER, DR.

	1850.						Int. 6 pr ct.	
2 mos.	Oct.	3	To Merchandise,	6 mos.	$91	00		96
0 “	“	5	“ “	4 “	58	90		05
0 “	“	13	“ “	4 “	100	00		22
4 “	“	19	“ “	8 “	44	60	$1	04
4 “	“	23	“ “	8 “	77	20	1	84
0 “	“	27	“ “	4 “	14	87		07
1 mo.	Nov.	2	“ “	4 “	92	27		49
3 mos.	“	7	“ “	6 “	389	96	6	31
3 “	“	14	“ “	6 “	21	24		37
5 “	“	17	“ “	8 “	66	00	1	84
5 “	“	20	“ “	8 “	44	67	1	28
3 “	“	22	“ “	6 “	11	14		21
2 “	Dec.	9	“ “	4 “	29	94		35
6 “	“	11	“ “	8 “	77	30	2	45
4 “	“	15	“ “	6 “	64	83	1	46
4 “	“	19	“ “	6 “	43	26	1	00
6 “	“	25	“ “	8 “	211	74	7	24
2 “	“	26	“ “	4 “	58	33		83
4 “	“	29	“ “	6 “	16	10		40
5 “	Jan.	11	“ “	6 “	423	90	11	37
7 “	“	12	“ “	8 “	41	34	1	52
3 “	“	16	“ “	4 “	16	91		31
3 “	“	21	“ “	4 “	77	40	1	43
5 “	“	26	“ “	6 “	19	00		56
7 “	“	27	“ “	8 “	91	80	3	63
			February 1st.		$2183	70	$47	23

2183.70) 47.230000 (216

Against 216, in the Quotient Table, stands 4 months and 9½ days, — the time, from February 1st, at which all the bills will average due, which is June 10th.

EXPLANATION.

In getting the time, in this example, we write 3 against the last month's bills that were bought on 4 months, and 2, 1, and 0, against the preceding months; against the 6 months bills, 5, 4, 3, and 2; against the 8 months bills, 7, 6, 5, and 4, which is the number of months respectively; and the date of the bills is the number of days which the bills have to run from February 1st until they are severally due, and consequently the time for which the interest is to be found.

Then we place the interest of each bill for the time standing against it on the margin against the bills.

Then we add all the bills together, and find the amount is $2183.70.

Then we add the interest of all the bills together, and place 4 ciphers at the right of the amount, — thus, $47.230000, — and divide this sum by the amount of all the bills, and get 216 for a quotient, or answer; and against this quotient, in the Table of Quotients, stands 4 months and 9½ days, which is the time, from February 1st, that all the bills will average due, which is readily found, by the Time Table, to be June 10th; and, by the same Table, we see that the average date 4 months previous is Feb. 10th; 6 months, Dec. 10th; 8 months, Oct. 10th.

NOTE. In this example, the whole amount of interest that all the bills would earn from Feb. 1st until each became due is $47.23; and as the debtor is required to pay the whole amount of all the bills at one time, the payment should be deferred just as long after Feb. 1st as would be required for the sum total of the bills to earn that sum, which is 4 months and 9½ days; and then the whole would average due.

The shortest possible method of finding the time in which any given sum will earn a given amount of interest is given in the rule, and used in the example, viz: annex 4 ciphers to the interest, divide by the principal, and against the quotient, in the Quotient Table, stands the time.

DEMONSTRATION.

	1850.						Int. 6 pr ct.	
3 mos.	Sept. 15	To Merchandise,	8 mos.	$100	00		1	75
3 "	Nov. 15	" "	6 mos.	100	00		1	75
3 "	Jan. 15	" "	4 mos.	100	00		1	75
		February 1st.		$300	00		$5	25

300.00) 5.250000 (175

Against 175, in the Quotient Table, stands 3 months and 15 days, the time, from February 1st, at which the bills will average due, which is May 15th.

In this example, each of the bills being bought 2 months later than the preceding one, and on 2 months shorter time, they must, of course, become due at the same time, viz., May 15th, which is the date given by this method; therefore, the method is correct.

EXAMPLE III. AVERAGE DUE.

When a part of the Bills have become Due.

GEORGE F. KIMBALL, Dr.

	1850.			M.	D.	Int. 6 pr ct.	6 mos.		Int. 6 pr ct.	
	July	7	To Merch.	2	23	$.98	$71	00		
	"	13	" "	2	17	.63	48	90		
	"	17	" "	2	13	.77	63	11		
	"	20	" "	2	10	.20	16	87		
	Aug.	1	" "	1	29	.67	67	90		
	"	6	" "	1	24	.43	47	00		
	"	9	" "	1	21	.14	16	23		
	"	14	" "	1	16	.20	26	25		
	Sept.	3	" "		27	.20	44	67		
	"	21	" "		9	.09	59	00		
0 mos.	Oct.	14	" "			$4.31	87	97		21
	"	19	" "				33	18		10
	"	23	" "				11	75		05
1 mo.	Nov.	2	" "				91	00		49
	"	5	" "				133	13		78
	"	11	" "				83	87		57
	"	15	" "				70	23		53
	"	22	" "				100	00		87
	"	25	" "				79	80		73
2 mos.	Dec.	3	" "				24	11		25
	"	9	" "				93	00	1	07
3 mos.	Jan.	5	" "				412	08	6	52
	"	8	" "				91	40	1	49
4 mos.	Feb.	16	" "				71	60	1	63
5 mos.	Mar.	24	" "				89	87	2	61
	"	27	" "				49	18	1	45
			April 1st.				$1983	10	$19	35
									4.	31
									$15.	04

1983.10) 15.040000 (75

Against 75, in the Quotient Table, stands 1 month and 15 days, — the time, from April 1st, at which all the bills will average due, which is May 15th.

EXPLANATION.

In getting the time, in this example, we write 5 against the last month's bills, and against the months preceding, 4, 3, 2, 1, and 0, respectively, which is the number of months; and the date of the bills is the number of days which the bills have to run from April 1st until they are severally due, and consequently the time for which the interest is to be found.

Then we place the interest of each bill (that has not become due) for the time standing against it on the margin against the bills.

Then we find the interest upon each bill that is overdue, from the time it became due up to April 1st, and place it on the blank space at the left, against the bills.

Then we add all the bills together, and find the amount is $1983.10.

Then we add the interest of all the bills that have become due together, and find the amount is $4.31, and subtract this sum from $19.35, the amount of the interest of the bills that have not become due, and place 4 ciphers at the right of the balance, — thus, $15.040000, — and divide this sum by the amount of all the bills, and get 75 for a quotient, or answer; and against this quotient, in the Table of Quotients, stands 1 month and 15 days, which is the time, from April 1st, that all the bills will average due, which is readily found, by the Time Table, to be May 15th; and, by the same Table, we see that the average date 6 months previous is Nov. 15th.

NOTE. In this example, all the bills that had not become due April 1st would earn $19.35 interest from that date until each became due; and if none of the bills had become due before that date, all the bills would average due in the same length of time from April 1st that is required for their whole amount to earn that sum. But $4.31 interest had accrued, at that date, on the bills that had become due, which would balance $4.31 of what the bills that were not due would earn before they became due, leaving a remainder of $15.04; and all the bills would average due in the same length of time, from April 1st, that is required for their sum total to earn the same amount, which is 1 month and 15 days.

N. B. Whenever the interest of the bills that have become due is greater than the interest of those that have not become due, the whole amount is *overdue;* and the smaller sum must be subtracted from the greater, and the remainder divided as in this example, and the time reckoned *back*, instead of forward, from the date used.

DEMONSTRATION.

1850.		M. D.	Int. 6 pr ct.	6 mos.		Int. 6 pr ct.	
Mar. 3	To Merch.	2 27	$1.45	$100	00		
5 mos. July 3	" "			100	00	2	55
1 mo. Nov. 3	" "			100	00		55
	Dec. 1st.			$300	00	$3	10
						1	45
	300.00) 1.650000 (55					1	65

Against 55, in the Quotient Table, stands 1 month and 3 days,— the time, from Dec. 1st, at which the bills will average due, which is Jan. 3d.

In this example, all the bills being of equal amount, and bought 4 months from each other, they will, of course, average due 6 months from the date of the second bill, which is July 3d; and, as this is the result by this method, it is correct.

EXAMPLE IV. AVERAGE DUE.

When a part are Cash Bills.

THOMAS F. MASON, DR.

	1850.			M. D.	Int.	6 mos.		Int. 6 pr ct.	
0 mos.	Mar.	9	To Merch.			$26	75		04
	"	11	" "	5 19	.48 Cash	17	14		
	"	15	" "			97	00		24
1 mo.	Apr.	3	" "			25	91		14
	"	18	" "			187	10	1	50
	"	20	" "	4 10	1.21 Cash	56	00		
	"	25	" "			43	50		40
	"	27	" "			100	00		95
2 mos.	May	12	" "			14	00		17
	"	16	" "			79	89	1	01
	"	17	" "	3 13	.86 Cash	50	00		
	"	19	" "			91	27	1	20
3 mos.	June	2	" "			210	00	3	22
	"	4	" "			49	58		78
	"	7	" "			11	10		18
	"	13	" "	2 17	1.47 Cash	114	50		
4 mos.	July	18	" "			78	50	1	82
	"	27	" "			66	00	1	62
	"	28	" "			87	91	2	17
5 mos.	Aug.	1	" "	29	.15 Cash	31	10		
	"	8	" "		$4.17	41	00	1	08
	"	11	" "			111	80	3	00
	"	14	" "			40	40	1	09
	"	19	" "			71	67	2	03
						$1702	12	$22	64
								4	17
			Sept. 1st.					$18	47

1702.12) 18.470000 (108

Against 108, in the Quotient Table, stands 2 months and 4½ days, — the time, from Sept. 1st, at which all the bills will average due, which is Nov. 5th.

EXPLANATION.

In getting the time, in this example, we write 5 against the last month's bills, and against the next months preceding, 4, 3, 2, 1, and 0, respectively, which is the number of months; and the date of the bills is the number of days which the bills have to run from Sept. 1st until they are severally due, and consequently the time for which the interest is to be found.

Then we place the interest of each bill (except the cash bills) for the time standing against it on the margin against the bills.

Then we find the interest upon each cash bill from the time it was bought until Sept. 1st, and place it on the blank space at the left, against the bills.

Then we add all the bills together, and find the amount is $1702.12.

Then we add the interest of the cash bills together, and find the amount is $4.17, and subtract this sum from $22.64, the interest of the *time* bills, and place 4 ciphers at the right of the balance, — thus, $18.470000, — and divide this sum by the amount of all the bills, and get 108 for a quotient, or answer; and against this quotient, in the Table of Quotients, stands 2 months and 4½ days, which is the time from Sept. 1st that all the bills will average due, which is readily found, by the Time Table, to be Nov. 5th.

EQUATION, OR AVERAGE, APPLIED TO THE STORAGE OF GOODS.

Find the interest upon the number of bales, boxes, or hogsheads, &c., the same as upon so many dollars, up to the time they were received and delivered, the same as upon the Dr. and Cr. in Example VI., Page 14; subtract the smaller from the larger sum of interest, add 2 ciphers to the balance, and divide by the whole amount of goods stored; and against the quotient, in the Quotient Table, stands the average length of time that all the goods were stored. If any of the goods remain in store at the time the average is made, they must be reckoned the same as if delivered at that date.

Received and delivered, on account of J. H. Watson, sundry bales of goods, up to Sept. 10, 1850:

Received.				Delivered.			
June 1st.		Bales.	Int.	June 1st.		Bales.	Int.
0 mos.	June 10	100	.17	1 mo.	July 28	200	1.93
"	18	600	1.80	2 mos.	Aug. 5	300	3.25
1 mo.	July 17	200	1.57	3 "	" 20	200	2.67
2 mos.	Aug. 4	100	1.07	Bales in store, (3 mos.)	Sept. 10	300	5.00
		1000	$4.61			1000	$12.85

12.85
4.61
1000) 8.2400 (82

Against 82, in the Quotient Table, stands 1 month and 19 days, which is the average length of time that the 1000 bales were stored.

EXAMPLE V. AVERAGE DUE.

When Cash is credited on account.

John C. Parmenter, Dr.

1850.							Int. 6 pr ct.	
1 mo.	Nov.	7	To Merchandise,	6 mos.	$97	20		60
	"	14	"	"	190	80	$1	40
	"	17	"	"	66	00		52
	"	19	"	"	89	33		73
	"	29	"	"	181	75	1	79
2 mos.	Dec.	2	"	"	46	60		49
3 mos.	Jan.	5	"	"	88	79	1	41
	"	20	"	"	79	46	1	45
4 mos.	Feb.	14	"	"	200	27	4	47
	"	21	"	"	93	10	2	19
	"	25	"	"	56	18	1	35
5 mos.	Mar.	13	"	"	71	88	1	96
	"	18	"	"	86	36	2	41
					$1347	72	$20	77
			April 1st.		350	68	3	53
					$997	04	$24	30

997.04) 24.300000 (243

Against 243, in the Quotient Table, stands 4 months and 26 days, — the time, from April 1st, at which all the bills will average due, which is August 26th.

EXPLANATION.

In getting the time, in this example, we write 5 against the last month's bills, and against the next months preceding, 4, 3, 2, and 1, respectively, which is the number of months; and the date of the bills is the number of days which the bills have to run from April 1st until they are severally due, and consequently the time for which the interest is to be found.

Then we place the interest of each bill for the time standing against it on the margin against the bills.

Then we find the interest upon each item of credit from the time it was credited until April 1st, and place it on the margin against the credit.

Then we add all the bills together, and subtract the credit from the amount, and find the balance due is $997.04.

Then we add the interest of the bills and the interest of the

JOHN C. PARMENTER, CR.

1850.		M.	D.			Int. 6 pr ct.	
Nov. 29	By Cash,	4	1	$100	00	2	02
Feb. 14	" "	1	16	150	00	1	15
" 25	" "	1	5	25	68		15
Mar. 13	" "		17	75	00		21
	April 1st.			$350	68	$3	53

credit together, and place 4 ciphers at the right of the amount, — thus, $24.300000, — and divide this sum by the balance due, and get 243 for a quotient, or answer; and against this quotient, in the Table of Quotients, stands 4 months and 26 days, which is the time, from April 1st, that the balance of the bills will average due, which is August 26th.

NOTE. In this example, the whole amount of interest that all the bills would earn from April 1st until each became due is $20.77; and if there was no credit in the account, payment should be deferred just as long after April 1st as would be required for the sum total of the bills to earn that sum. But there has $3.53 interest accrued on the credit from the time it was paid *up to* April 1st, and payment should be deferred as much longer as it would take all the bills to earn $3.53, — otherwise the debtor would lose this amount of interest: and as the credit is to be deducted from the debtor side of the account, the payment should be deferred long enough for the *balance due*, instead of the whole amount, to earn the whole amount of interest, which is 4 months and 26 days; and then the balance would average due.

DEMONSTRATION.

1850.		Dr.			Int. 6 pr ct.	
3 mos. Jan. 18	To Merchandise,	6 mos.	$100	00	1	80
5 " Mar. 18	" "		100	00	2	80
			$200	00	$4	60
	April 1st.					
		Days. Cr.				
Mar. 18	By Cash,	12	$100	00		20
	April 1st.		$100	00	$4	80

100.00) 4.800000 (480

Against 480, in the Quotient Table, stands 9 months and 18 days, — which is the time, from Apr. 1st, in which the balance will average due, which is Jan. 18th, 1851.

[For Explanation, see p. 13.]

EXAMPLE VI. AVERAGE DUE.

When there is an Exchange of Goods on Time.

JACOB W. WORTHEN, DR.

	1850.					Int. 6 pr ct.	
0 mos.	Sept. 11	To Merchandise,	6 mos.	$36	83		07
	" 14	"	"	47	27		11
	" 19	"	"	186	91		60
	" 23	"	"	17	11		07
1 mo.	Oct. 4	"	"	89	03		51
	" 9	"	"	77	66		51
	" 13	"	"	313	13	$2	25
2 mos.	Nov. 8	"	"	46	69		53
	" 12	"	"	89	31	1	07
	" 26	"	"	104	00	1	49
3 mos.	Dec. 9	"	"	90	91	1	51
	" 17	"	"	200	27	3	57
	" 21	"	"	88	72	1	65
	" 26	"	"	50	40		97
	" 27	"	"	60	70	1	19
4 mos.	Jan. 3	"	"	99	00	2	03
	" 13	"	"	71	33	1	57
	" 18	"	"	14	10		32
	" 20	"	"	27	93		65
5 mos.	Feb. 18	"	"	46	26	1	29
	" 19	"	"	111	14	3	13
				$1868	70	$25	09
				718	71	9	95
		March 1st.		$1149	99	$15	14
		1149.99) 15.140000 (131					

Against 131, in the Quotient Table, stands 2 months and 18½ days, — the time, from March 1st, at which the balance of the account will average due, which is May 19th.

EXPLANATION.

In getting the time, in this example, we write 5 against the last month's bills, and against the next months preceding, 4, 3, 2, 1, and 0, respectively (the same figures against the same months on both sides of the account, — that is, 4 against January, 3 against December, &c., on both Dr. and Cr.), which is the number of months; and the date of the bills is the number of

Jacob W. Worthen, Cr.

	1850.						Int. 6 prct.	
1 mo.	Oct.	8	By Merchandise,	6 mos.	$64	08		41
	"	13	"	"	92	46		66
	"	15	"	"	70	30		53
2 mos.	Nov.	6	"	"	16	83		19
	"	23	"	"	47	14		65
	"	26	"	"	200	25	2	87
	"	28	"	"	11	84		18
3 mos.	Dec.	3	"	"	20	20		31
	"	13	"	"	37	82		65
	"	15	"	"	46	36		81
4 mos.	Jan.	24	"	"	92	80	2	23
	"	26	"	"	18	63		46
			March 1st.		$718	71	$9	95

days which the bills have to run, from March 1st, until they are severally due, and consequently the time for which the interest is to be found.

Then we place the interest of each bill (on both sides of the account) for the time standing against it on the margin against the bills.

Then we subtract the interest of the Cr. side from the interest of the Dr. side of the account, and place 4 ciphers at the right of the remainder, — thus, $15.140000, — and divide this sum by the balance due, viz., $1149.99, and get 131 for a quotient, or answer; and against this quotient, in the Table of Quotients, stands 2 months and 18½ days, which is the time, from March 1st, that the balance of the account will average due, which is readily found, by the Time Table, to be May 19th.

Note. In this example, all the bills on the Dr. side would earn $25.09 interest, and all the bills on the Cr. side $9.95, from March 1st, until each bill became due; and the balance due on the account would average due just as far ahead of March 1st as would be required for the same amount to earn $15.14 (the difference between the interest of the Cr. and Dr. sides of the account), which is 2 months and 18½ days.

N. B. When the interest of the smaller side of the account is larger than the interest of the greater side, subtract the smaller sum of interest from the greater and divide as before, and reckon the time *back*, instead of forward, from the date used.

EXAMPLE VII. AVERAGE DUE.

Accounts containing unequal time, cash bills, cash credit,

Thompson, Storrs, & Co., **Dr.**

1850.			July 1st.					Int. 6 pr. ct.	
0 mo.	July	13	To Merchandise,		4 mos.	$95	00	2	11
	"	19	"	"	Cash	79	80		25
	"	23	"	"	7 mos.	400	00	15	53
	"	28	"	"	6 "	350	00	12	13
1 mo.	Aug.	9	"	"	1 "	68	40		78
	"	11	"	"	4 "	29	70		81
	"	17	"	"	Cash	20	00		16
	"	21	"	"	9 mos.	88	25	4	71
2 mos.	Sept.	3	"	"	8 "	51	69	2	63
	"	8	"	"	2 "	81	28	1	73
	"	13	"	"	6 "	550	08	23	19
	"	29	"	"	Cash	38	40		56
4 mos.	Nov.	2	"	"	6 mos.	300	00	15	10
	"	7	"	"	3 "	48	91	1	78
	"	18	"	"	4 "	75	13	3	23
	"	22	"	"	8 "	33	20	2	10
	"	29	"	"	1 "	56	18	1	67
5 mos.	Dec.	5	"	"	Cash	16	85		44
	"	6	"	"	6 mos.	81	00	4	54
	"	9	"	"	4 "	97	68	4	56
	"	27	"	"	2 "	59	12	2	34
						$2620	67	$100	35
						1728	35	63	88
						$892	32	$36	47
			892.32) 36.470000 (408						

Against 408 in the Quotient Table, stands 8 months and $4\frac{1}{2}$ days, which is the time from July 1st, at which the balance of the account will average due, which is March 5th.

EXPLANATION.

In getting the time, in this example, we write 0 against the first month's bills, and against the following months, 1, 2, 3, 4, and 5, respectively (the same figures against the same months on both sides of the account,—that is, 1 against Aug., 2 against Sept., &c., on both Dr. and Cr.), which is the number of months, and the date of the bills is the number of days, *bills overdue, goods returned, exchange of goods on time, &c.*

THOMPSON, STORRS, & Co., Cr.

1850.			July 1st.				Int. 6 pr. ct.	
1 mo.	Aug.	9	By Cash,		$75	00		49
	"	14	" Merchandise,	4 mos.	92	14	2	51
	"	19	" "	6 "	300	00	11	45
2 mos.	Sept.	3	" "	2 "	49	96	1	03
	"	11	" "	8 "	81	10	4	20
	"	13	" Cash,		200	00	2	43
	"	17	" Merchandise,	Cash	63	14		81
3 mos.	Oct.	8	" "	8 mos.	47	08	2	65
	"	14	" "	4 "	35	78	1	34
4 mos.	Nov.	18	" "	Cash	250	04	5	75
	"	19	" Goods returned,	4 mos.	34	11	1	47
5 mos.	Dec.	27	" Note,	6 "	500	00	29	75
					$1728	35.	$63	88

from July 1st, until they were severally purchased, to which we add the time on which the bills were bought, which gives us the time from July 1st, until they are severally due.

Then we place the interest of each bill (on both sides of the account), for the time from July 1st until it is due, on the margin against the bills.

Then we subtract the interest of the Cr. side from the interest of the Dr. side of the account, and place 4 ciphers at the right of the remainder,—thus, $36.470000,—and divide this sum by the balance due, viz., $892.32, and get 408 for a quotient; and against this quotient, in the Table of Quotients, stands 8 months and 4½ days, which is the time from July 1st, that the balance of the account will average due, which is readily found by the Time Table to be March 5th.

NOTE. In this example, all the bills on the debtor side would earn $100.35 interest, and all the bills on the Cr. side, $63.88 from July 1st, until each bill became due; and the balance due on the account would average due just as far ahead of July 1st, as would be required for the same amount to earn $36.47 (the difference between the interest of the Cr. and Dr. sides of the account), which is 8 months and 4½ days.

N. B. When the interest of the smaller side of the account is larger than the interest of the greater side, subtract the smaller sum of interest from the greater, and divide as before, and reckon the time *back*, instead of forward, from the date used.

TABLE OF QUOTIENTS,

FOR MONTHS AND DAYS, AT 6 PER CENT.

Quo.	Mon.	Day.	*	Quo.	Mon.	Day.	*	Quo.	Mon.	Day.	*	Quo.	Mon.	Day.	*	Quo.	Mon.	Day.	*	Quo.	Mon.	Day.
1		½		51	1	½		101	2	½		151	3	½		201	4	½		251	5	½
2		1		52	1	1		102	2	1		152	3	1		202	4	1		252	5	1
3		1½		53	1	1½		103	2	1½		153	3	1½		203	4	1½		253	5	1½
4		2		54	1	2		104	2	2		154	3	2		204	4	2		254	5	2
5		3		55	1	3		105	2	3		155	3	3		205	4	3		255	5	3
6		3½		56	1	3½		106	2	3½		156	3	3½		206	4	3½		256	5	3½
7		4		57	1	4		107	2	4		157	3	4		207	4	4		257	5	4
8		4½		58	1	4½		108	2	4½		158	3	4½		208	4	4½		258	5	4½
9		5		59	1	5		109	2	5		159	3	5		209	4	5		259	5	5
10		6		60	1	6		110	2	6		160	3	6		210	4	6		260	5	6
11		6½		61	1	6½		111	2	6½		161	3	6½		211	4	6½		261	5	6½
12		7		62	1	7		112	2	7		162	3	7		212	4	7		262	5	7
13		7½		63	1	7½		113	2	7½		163	3	7½		213	4	7½		263	5	7½
14		8		64	1	8		114	2	8		164	3	8		214	4	8		264	5	8
15		9		65	1	9		115	2	9		165	3	9		215	4	9		265	5	9
16		9½		66	1	9½		116	2	9½		166	3	9½		216	4	9½		266	5	9½
17		10		67	1	10		117	2	10		167	3	10		217	4	10		267	5	10
18		10½		68	1	10½		118	2	10½		168	3	10½		218	4	10½		268	5	10½
19		11		69	1	11		119	2	11		169	3	11		219	4	11		269	5	11
20		12		70	1	12		120	2	12		170	3	12		220	4	12		270	5	12
21		12½		71	1	12½		121	2	12½		171	3	12½		221	4	12½		271	5	12½
22		13		72	1	13		122	2	13		172	3	13		222	4	13		272	5	13
23		13½		73	1	13½		123	2	13½		173	3	13½		223	4	13½		273	5	13½
24		14		74	1	14		124	2	14		174	3	14		224	4	14		274	5	14
25		15		75	1	15		125	2	15		175	3	15		225	4	15		275	5	15
26		15½		76	1	15½		126	2	15½		176	3	15½		226	4	15½		276	5	15½
27		16		77	1	16		127	2	16		177	3	16		227	4	16		277	5	16
28		16½		78	1	16½		128	2	16½		178	3	16½		228	4	16½		278	5	16½
29		17		79	1	17		129	2	17		179	3	17		229	4	17		279	5	17
30		18		80	1	18		130	2	18		180	3	18		230	4	18		280	5	18
31		18½		81	1	18½		131	2	18½		181	3	18½		231	4	18½		281	5	18½
32		19		82	1	19		132	2	19		182	3	19		232	4	19		282	5	19
33		19½		83	1	19½		133	2	19½		183	3	19½		233	4	19½		283	5	19½
34		20		84	1	20		134	2	20		184	3	20		234	4	20		284	5	20
35		21		85	1	21		135	2	21		185	3	21		235	4	21		285	5	21
36		21½		86	1	21½		136	2	21½		186	3	21½		236	4	21½		286	5	21½
37		22		87	1	22		137	2	22		187	3	22		237	4	22		287	5	22
38		22½		88	1	22½		138	2	22½		188	3	22½		238	4	22½		288	5	22½
39		23		89	1	23		139	2	23		189	3	23		239	4	23		289	5	23
40		24		90	1	24		140	2	24		190	3	24		240	4	24		290	5	24
41		24½		91	1	24½		141	2	24½		191	3	24½		241	4	24½		291	5	24½
42		25		92	1	25		142	2	25		192	3	25		242	4	25		292	5	25
43		25½		93	1	25½		143	2	25½		193	3	25½		243	4	25½		293	5	25½
44		26		94	1	26		144	2	26		194	3	26		244	4	26		294	5	26
45		27		95	1	27		145	2	27		195	3	27		245	4	27		295	5	27
46		27½		96	1	27½		146	2	27½		196	3	27½		246	4	27½		296	5	27½
47		28		97	1	28		147	2	28		197	3	28		247	4	28		297	5	28
48		28½		98	1	28½		148	2	28½		198	3	28½		248	4	28½		298	5	28½
49		29		99	1	29		149	2	29		199	3	29		249	4	29		299	5	29
50	1		*	100	2		*	150	3		*	200	4		*	250	5		*	300	6	

Divide any quotient larger than 600 by 600, and the answer will be the

TABLE OF QUOTIENTS,

FOR MONTHS AND DAYS, AT 6 PER CENT.

Quo	Mon.	Day.	*	Quo.	Mon.	Day.	*	Quo.	Mon.	Day.	*	Quo.	Mon.	Day.	*	Quo.	Mon.	Day.	*	Quo.	Mon.	Day.
301	6	½		351	7	½		401	8	½		451	9	½		501	10	½		551	11	½
302	6	1		352	7	1		402	8	1		452	9	1		502	10	1		552	11	1
303	6	1½		353	7	1½		403	8	1½		453	9	1½		503	10	1½		553	11	1½
304	6	2		354	7	2		404	8	2		454	9	2		504	10	2		554	11	2
305	6	3		355	7	3		405	8	3		455	9	3		505	10	3		555	11	3
306	6	3½		356	7	3½		406	8	3½		456	9	3½		506	10	3½		556	11	3½
307	6	4		357	7	4		407	8	4		457	9	4		507	10	4		557	11	4
308	6	4½		358	7	4½		408	8	4½		458	9	4½		508	10	4½		558	11	4½
309	6	5		359	7	5		409	8	5		459	9	5		509	10	5		559	11	5
310	6	6		360	7	6		410	8	6		460	9	6		510	10	6		560	11	6
311	6	6½		361	7	6½		411	8	6½		461	9	6½		511	10	6½		561	11	6½
312	6	7		362	7	7		412	8	7		462	9	7		512	10	7		562	11	7
313	6	7½		363	7	7½		413	8	7½		463	9	7½		513	10	7½		563	11	7½
314	6	8		364	7	8		414	8	8		464	9	8		514	10	8		564	11	8
315	6	9		365	7	9		415	8	9		465	9	9		515	10	9		565	11	9
316	6	9½		366	7	9½		416	8	9½		466	9	9½		516	10	9½		566	11	9½
317	6	10		367	7	10		417	8	10		467	9	10		517	10	10		567	11	10
318	6	10½		368	7	10½		418	8	10½		468	9	10½		518	10	10½		568	11	10½
319	6	11		369	7	11		419	8	11		469	9	11		519	10	11		569	11	11
320	6	12		370	7	12		420	8	12		470	9	12		520	10	12		570	11	12
321	6	12½		371	7	12½		421	8	12½		471	9	12½		521	10	12½		571	11	12½
322	6	13		372	7	13		422	8	13		472	9	13		522	10	13		572	11	13
323	6	13½		373	7	13½		423	8	13½		473	9	13½		523	10	13½		573	11	13½
324	6	14		374	7	14		424	8	14		474	9	14		524	10	14		574	11	14
325	6	15		375	7	15		425	8	15		475	9	15		525	10	15		575	11	15
326	6	15½		376	7	15½		426	8	15½		476	9	15½		526	10	15½		576	11	15½
327	6	16		377	7	16		427	8	16		477	9	16		527	10	16		577	11	16
328	6	16½		378	7	16½		428	8	16½		478	9	16½		528	10	16½		578	11	16½
329	6	17		379	7	17		429	8	17		479	9	17		529	10	17		579	11	17
330	6	18		380	7	18		430	8	18		480	9	18		530	10	18		580	11	18
331	6	18½		381	7	18½		431	8	18½		481	9	18½		531	10	18½		581	11	18½
332	6	19		382	7	19		432	8	19		482	9	19		532	10	19		582	11	19
333	6	19½		383	7	19½		433	8	19½		483	9	19½		533	10	19½		583	11	19½
334	6	20		384	7	20		434	8	20		484	9	20		534	10	20		584	11	20
335	6	21		385	7	21		435	8	21		485	9	21		535	10	21		585	11	21
336	6	21½		386	7	21½		436	8	21½		486	9	21½		536	10	21½		586	11	21½
337	6	22		387	7	22		437	8	22		487	9	22		537	10	22		587	11	22
338	6	22½		388	7	22½		438	8	22½		488	9	22½		538	10	22½		588	11	22½
339	6	23		389	7	23		439	8	23		489	9	23		539	10	23		589	11	23
340	6	24		390	7	24		440	8	24		490	9	24		540	10	24		590	11	24
341	6	24½		391	7	24½		441	8	24½		491	9	24½		541	10	24½		591	11	24½
342	6	25		392	7	25		442	8	25		492	9	25		542	10	25		592	11	25
343	6	25½		393	7	25½		443	8	25½		493	9	25½		543	10	25½		593	11	25½
344	6	26		394	7	26		444	8	26		494	6	26		544	10	26		594	11	26
345	6	27		395	7	27		445	8	27		495	9	27		545	10	27		595	11	27
346	6	27½		396	7	27½		446	8	27½		496	9	27½		546	10	27½		596	11	27½
347	6	28		397	7	28		447	8	28		497	9	28		547	10	28		597	11	28
348	6	28½		398	7	28½		448	8	28½		498	9	28½		548	10	28½		598	11	28½
349	6	29		399	7	29		449	8	29		499	9	29		549	10	29		599	11	29
350	7		*	400	8		*	450	9		*	500	10		*	550	11		*	600	12	

years, and against the remainder in the table stands the months and days.

A COMPLETE TIME TABLE,

Showing the number of months, and the exact number of days, from any day in one month to the same day in any other month; — very useful in computing Interest, averaging Bills, showing when Notes and Bills on time become due, &c., &c.

From	To	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.
JANUARY	Months	12	1	2	3	4	5	6	7	8	9	10	11
	Days.	365	31	59	90	120	151	181	212	243	273	304	334
FEBRUARY	Months.	11	12	1	2	3	4	5	6	7	8	9	10
	Days.	334	365	28	59	89	120	150	181	212	242	273	303
MARCH	Months.	10	11	12	1	2	3	4	5	6	7	8	9
	Days.	306	337	365	31	61	92	122	153	184	214	245	275
APRIL	Months.	9	10	11	12	1	2	3	4	5	6	7	8
	Days.	275	306	334	365	30	61	91	122	153	183	214	244
MAY	Months.	8	9	10	11	12	1	2	3	4	5	6	7
	Days.	245	276	304	335	365	31	61	92	123	153	184	214
JUNE	Months.	7	8	9	10	11	12	1	2	3	4	5	6
	Days.	214	245	273	304	334	365	30	61	92	122	153	183
JULY	Months.	6	7	8	9	10	11	12	1	2	3	4	5
	Days.	184	215	243	274	304	335	365	31	62	92	123	153
AUGUST	Months.	5	6	7	8	9	10	11	12	1	2	3	4
	Days.	153	184	212	243	273	304	334	365	31	61	92	122
SEPTEMBER	Months.	4	5	6	7	8	9	10	11	12	1	2	3
	Days.	122	153	181	212	242	273	303	334	365	30	61	91
OCTOBER	Months.	3	4	5	6	7	8	9	10	11	12	1	2
	Days.	92	123	151	182	212	243	273	304	335	365	31	61
NOVEMBER	Months.	2	3	4	5	6	7	8	9	10	11	12	1
	Days.	61	92	120	151	181	212	242	273	304	334	365	30
DECEMBER	Months.	1	2	3	4	5	6	7	8	9	10	11	12
	Days.	31	62	90	121	151	182	212	243	274	304	335	365

EXPLANATION.

EXAMPLES. — Required the number of days from March 4th to December 4th. Look for March at the left hand of the table, and trace the line along to the right, and under December stands 9, *the number of months, and* 275, *the number of days*. By adding or subtracting, as the case may be, when the date to which we wish to reckon is greater or less than the one we reckon from, we have the length of time between any two dates. Thus: Required the time from June 10th to October 17th. We see by the table that it is 4 months from June 10th to October 10th; and, by adding the 7 days from the 10th to the 17th, we have 4 months and 7 days. If the time from June 10th to October 6th be required, subtract the 4 days from the 6th to the 10th from 4 months, and we have 3 months and 26 days.

If the time is required from a given date to a *preceding* date, reckon from the earliest to the latest date, the same as above, and you have the answer. Thus: Required the time from December 4th back to April 10th; — reckon from April 10th to December 10th, and subtract the 6 days from the 4th to the 10th, and we have 7 months and 24 days.

When will a bill become due dated July 10th, bought on 6 months? Look for July on the left, and trace the line along until you come to 6, and over it stands January, the answer.

What is the average *date* of an account that averages *due* January 10th, bought on 6 months? Look for January in the top line, and draw the finger down until you come to 6, and against this line at the left of the table stands July, the answer.

Entered according to Act of Congress, in the year 1851, by L. BROOKS, in the Clerk's Office of the District Court for the District of New Hampshire.